

GARDEN ECOSYSTEMS

**Designing spaces to support
wildlife, protect the environment,
and enhance our lives.**



Photo by Jane Gamble



www.anshome.org

WHAT GOOD IS A GARDEN?

Gardens are pretty and peaceful places for people to spend time. But with a little ecological thinking, gardens can also be powerful forces of environmental healing. In gardens we can provide food and habitat for wildlife, support the pollinators that are essential to crops, filter pollutants from air and water, build soil health, store carbon, manage water, cool the planet, *and* create beautiful oases of respite from our busy lives.

Many of these benefits are attainable whether a garden is made up of multiple acres, several square feet, or even a collection of containers. The serious environmental challenges we face demand that we make use of every square inch possible for ecological benefits.

Landowners can use this guide to be responsible stewards of ground that has a deeper history and a longer future than any deed could reflect. And we can all work to make our communities friendlier to the broader natural community.

We needn't wander in the wilderness to find more harmony with nature. Start looking at the spaces around you. What if the land of every road median, library, school yard, police station, corporate campus, place of worship, utility right-of-way, and even strip mall was managed for maximum ecological benefit? What if we were all living in one big garden ecosystem?

"We have lived by the assumption that what was good for us would be good for the world...We must change our lives, so that it will be possible to live by the contrary assumption that what is good for the world will be good for us."

From "A Native Hill" by Wendell Berry

ALL HABITAT NEEDS

A garden ecosystem should provide for multiple habitat needs of wildlife. This can be done even at a small scale. If you can provide all of the habitat needs of several insects, you've created a food source for many other species of wildlife.

Food



American Goldfinch

Gardening with native plants provides nectar, seeds, nuts, fruits, berries, foliage and pollen to wildlife. The insects that thrive on native plants are another important food source. Bird feeders are a good way to see wildlife in your yard, and can provide supplemental nutrition in late winter and early spring when wild food sources are scarce.

Water



Eastern Bluebirds

Maintaining even a small amount of water in a garden can attract a surprising amount of wildlife in a dry spell. While ponds may allow for amphibian breeding, even a shallow dish of water will be useful to birds and mammals. Mosquitoes can be safely controlled in water sources using the non-toxic Mosquito Dunks.

Shelter



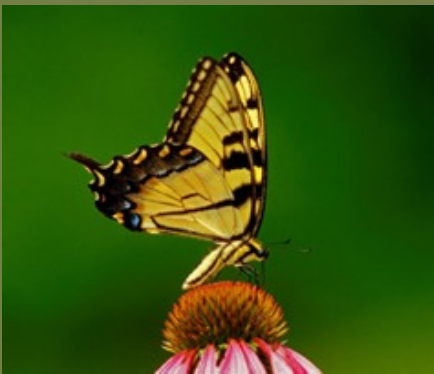
Carolina Chickadee

Nesting

Creating plant layers will provide cover and nesting sites for a variety of wildlife. A little messiness in a garden can do the same. Leaf litter, woody debris and old plant stalks create habitat niches for insects and provide nesting materials for birds. Short on space? Consider a habitat condominium!

WHY PLANT NATIVE SPECIES?

As primary producers, plants form the foundation of food webs. The wildlife of a region co-evolve with its plant communities, making local native plants the best food sources. Many insects, in particular, are entirely dependent on specific plant species. Insects, in turn, feed animals higher in the web.



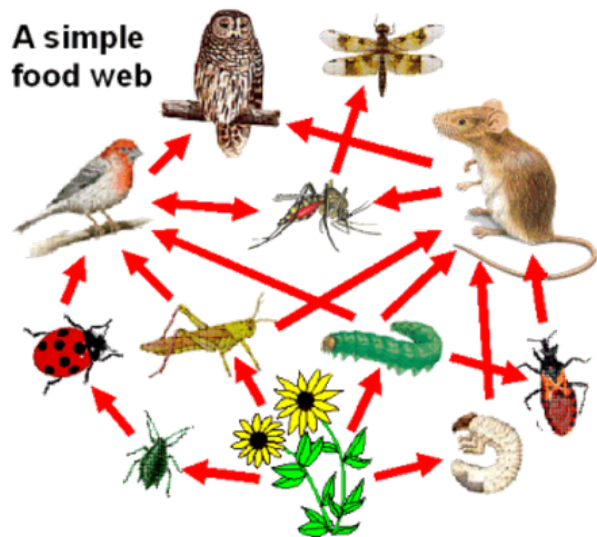
A tiger swallowtail on coneflower



A bumblebee on Virginia bluebell



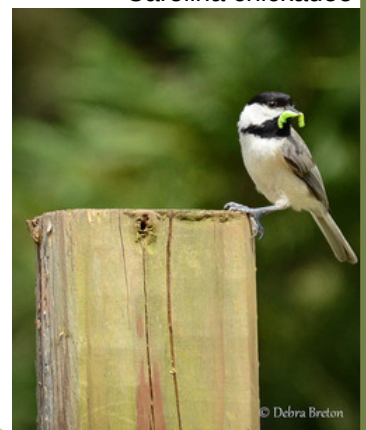
Monarch chrysalides on milkweed



Oaks alone feed the caterpillars of over 500 species of butterflies and moths

And it requires at least 6,000 caterpillars to raise one clutch of chickadees

Carolina chickadee



© Debra Breton

THE LAYERS OF A GARDEN ECOSYSTEM

Garden ecosystems are most successful if they replicate relationships in natural plant communities. Many yards have turf grass lawns with a few shrubs at the edge and perhaps one shade tree. In natural communities, plants with different growth habits intermingle creating structural complexity that benefits wildlife, builds soil health, and encourages stormwater infiltration.

Canopy

Trees provide many ecological benefits including filtering pollutants, lowering air temperature, and providing nesting sites. If you don't have any, consider planting some -- the best time to do so is twenty years ago, but the second best time is right now!

Shrubs

The dense irregular branching of shrubs provides cover near the ground that birds such as the eastern towhee and the wood thrush prefer for nesting. Their deep roots hold soil on slopes.

Groundlayer

Grasses, ferns, and wildflowers growing close to the ground protect the soil surface from erosion by rain and create habitat conditions necessary for many invertebrates, amphibians, and reptiles.

Soil

Far from just dirt, soil is a zone of complex interactions between plant roots, minerals, decaying organic matter, insects and micro-organisms. Healthy soil absorbs stormwater and recycles nutrients for use by plants.

FOUR SEASONS

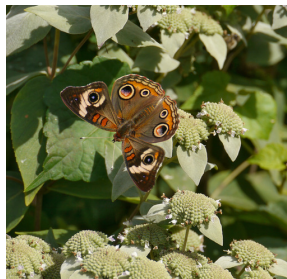
Be sure to think about the needs of wildlife in all seasons. Rather than putting your garden to bed for the winter, design it so that it works for wildlife year-round.

Early and late flowers

Support pollinators by planning a garden with blooms from April to October. Even monarchs need more than milkweed. Late season asters and goldenrods are crucial to fuel their migration.



Early blooming redbud



Mid-season blooming mountain mint



Late blooming aster

Berry festival

As summer turns to fall and winter, insect food becomes unavailable in our area. Winter-resident birds rely on fat-rich berries as weather turns cold. Plant shrubs like winterberry and chokeberry and watch for the happy winter feast.



Cedar waxwing eating winterberry

Standing Invitation

Fall cleanup may be good for your landscaper's wallet, but it's a losing proposition for wildlife. Leave plants standing through winter. Seedheads will continue to feed animals and insects will shelter in hollow stalks.



Goldenrod seedhead

DO LESS FOR THE ENVIRONMENT

Lose the lawn competition

While lawn mowing may have built character in your youth, we suggest you do much less of it. Lawns have very few ecological benefits and require inputs with negative environmental consequences. Replace as much lawn as possible with deep-rooted, locally-adapted native plants and then read a great ecology book while your neighbors are watering, mowing and fertilizing.

Let down your guard

Many gardeners watch vigilantly for signs that their plants are being eaten and take immediate action to kill the offenders. We invite you to put down the pesticides and peacefully observe leaf holes as evidence of a great food web. Take a nap, knowing that your garden is doing good work. Pesticides do as much harm to the ladybugs that eat aphids as to the aphids themselves. Trust that your garden ecosystem will arrive at a balance of insect herbivores and their predators.*

Leave some litter behind

We give you permission to sit and watch the birds while your neighbors are raking. Decomposing leaves replenish the soil, while leaf litter retains moisture and regulates temperature at ground level. Animals and even plants shelter under this blanket of leaves in the winter. Some lepidoptera even lay eggs or make cocoons in leaf litter. Let leaves lie in your garden beds and enjoy more butterflies in the spring!

* A note on pyrethrins often advertised as "natural" by mosquito control companies. These chemicals are toxic to a wide range of insects. We suggest repellants for your clothing rather than pesticides in your yard.

CREATE A PLAN

Inventory

Create a simple measured map of your site. Note what is already growing from turf to shrubs to trees. Dig a few holes and fill with water to see how well your soil drains. Define areas that receive full sun, partial sun or shade. Observe how water travels on a rainy day. What benefits is your site already providing? Where could improvements be made? What layers are missing? What habitat needs are there? Can you capture stormwater in a rain garden?



Dutchman's Breeches



Jewelweed



Virginia bluebells

Choose plants

Now you're ready for the best part. Think about what kind of native plant community could thrive at your site. Choose multiple plants from that community, since they have evolved to work well together. Be sure to create layers with grasses, forbs and shrubs. You can use the species suggested in this guide, visit the Audubon Naturalist Shop for native gardening books, or use free online tools.

www.nwf.org/NativePlantFinder

www.audubon.org/plantsforbirds

MEADOW GARDENS

for the Chesapeake Bay Watershed

Do you have a sunny, well-drained area in your yard or community? Meadows thrive without fertilizing and require only annual mowing. Establish a meadow quickly by planting flats of plugs and broadcasting seed. Control invasive vines by cutting back repeatedly.

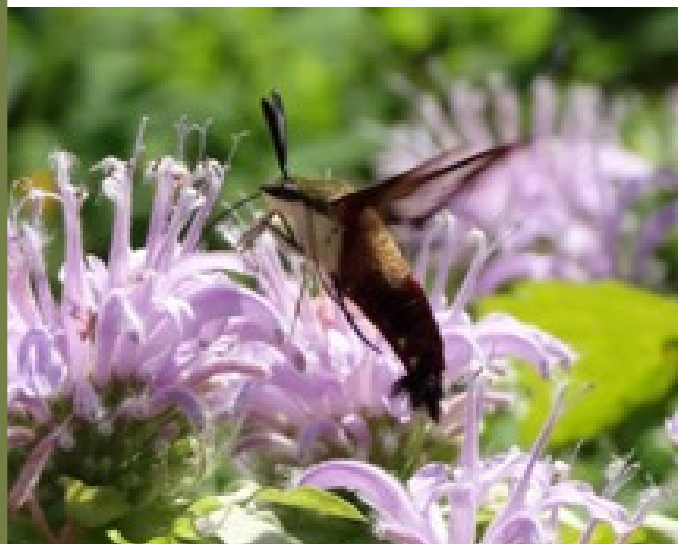
Use this plant list to create a meadow garden that benefits wildlife and creates a beautiful, low-maintenance landscape with a sense of place.

Grasses

Little bluestem
Indian grass
Purple lovegrass
Southern wild rye
Bottlebrush grass
Purpletop
River oat
Eastern star sedge
Fox sedge

Wildflowers

Common milkweed
Butterfly weed
Partridge pea
Narrow-leaved mountain mint
Black-eyed susan
New York Ironweed
Wreath goldenrod
Wild bergamot
Blazing star
Blue mistflower
New England aster
Wild blue indigo
Tickseed
Joepyee weed
Wild geranium
Thin-leaved sunflower
Oxeye sunflower
Sundrops
Phlox



WOODLAND GARDENS

for the Chesapeake Bay Watershed



Bloodroot

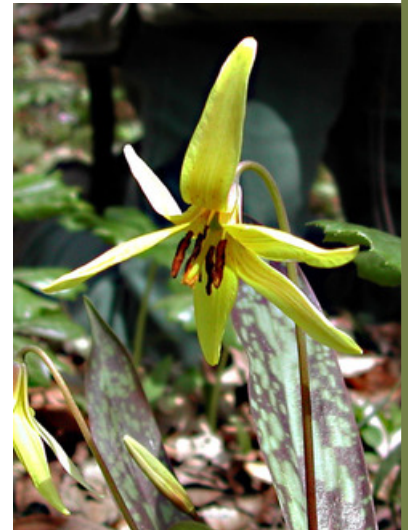
Do you have trees that create areas of dappled or deep shade? Adding shrub and ground layers below trees adds cover for birds and other wildlife. Fruits and flowers of these plants also feed wildlife.

To create more wildlife value consider leaving 15-ft standing snags when trees must be taken down, as well as logs on the ground. Woodpeckers and salamanders will thank you!

Use this list to create a woodland garden that benefits wildlife and creates a beautiful, low-maintenance landscape with a sense of place.

Ground layer

Blue wood sedge
Bottlebrush grass
Christmas fern
Sensitive fern
Blue-stem goldenrod
Tickseed sunflower
White wood aster
Mayapple
Jack in the pulpit
Spring beauty
Wild bleeding heart
Trout lily
Alumroot
Solomon's seal
Golden ragwort
Smooth beardtongue
Bloodroot
Trillium
Violet



Trout lily

Shrub layer

Witch hazel
Gray dogwood
Inkberry
Winterberry
Mountain laurel
Spicebush
Elderberry
Highbush blueberry
Maple-leaved arrowwood

Mayapple and Trillium



RAINGARDENS

The health of streams and the Chesapeake Bay begins in our neighborhoods. Programs like DC Riversmart Homes and Montgomery County Rainscapes subsidize green stormwater management projects like rain gardens.

The purpose of a rain garden is to use natural systems to improve water quality in the **watershed** and nearby bodies of water. A rain garden is a planted depression that allows water runoff from impervious surfaces like roofs, driveways, walkways, parking lots, and compacted lawns the opportunity to be filtered and absorbed into the ground. This reduces the negative impacts of stormwater runoff by creating a designated area on-site where the stormwater can soak into the ground over time.

RESIDENTIAL RAIN GARDEN

(Keep 10 feet away from house or any building foundations)

source: <http://www.eaglecreekwatershed.org>

native plants absorb runoff and pollutants while attracting songbirds and butterflies

root zone aids in nutrient uptake, microbial activity, and infiltration

gravel bed (if needed)

ponding zone allows pollutants to settle and organic matter to accumulate

gutter

rock/vegetated swale or pipe

overflow structure (if needed)

prepared soil mixture (if needed):
50-60% sand
20-30% compost
20-30% topsoil

perforated pipe to outlet (if needed)

Native plants that thrive in the periodic flooding of rain gardens.

Flowers

Swamp milkweed
Swamp rose mallow
Blue flag iris
Beebalm
Joey weed
Turtlehead
Blazing star
Cardinal flower
Black-eyed Susan
Ironweed

Grasses & Ferns

Sea oats
Soft rush
Royal fern
Cinammon fern

Shrubs

Buttonbush
Serviceberry
Inkberry
Winterberry
Silky dogwood
Spicebush
Elderberry
Highbush blueberry
Arrowwood viburnum
Red chokeberry

MORE RESOURCES

Native Plant Nurseries

Maryland

Chesapeake Natives, Upper Marlboro
Babikow, Baltimore
Environmental Concern, St Michael's
Herring Run Nursery, Baltimore
American Native Plants, Perry Hall
Lauren's Garden Service, Glenwood

Virginia

Earth Sangha, Springfield
Nature By Design, Alexandria

Online

Izel Plants, www.izelplants.com

Organizations

Maryland Native Plant Society

www.mdflora.org

Virginia Native Plant Society

www.vnps.org

Chesapeake Bay Landscape Professionals

www.cblpro.org

Visit ANS at Woodend Nature Sanctuary to:

Find ecological gardening books at the Audubon Naturalist Shop
Take native plant gardening workshops
Tour our gardens, meadows and forest as we restore biodiversity

www.anshome.org/woodend-restoration

The Blair Native Plant Garden at Woodend Nature Sanctuary

